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## **CLAIMS**

## What is claimed is:

1	l.	A method	comprising:

- 2 receiving a group of data having a group of set values;
- identifying a group of positions of the group of set values within the group of
- 4 data;
- for each of the group of positions, encoding a run of non-set values preceding
  each of the group of positions.
- 1 2. The method of claim 1 further comprising encoding a second run of non-set
- 2 values with an ending symbol.
- 1 3. The method of claim 1 further comprising encoding a group of signs
- 2 corresponding to the group of set values.
- 1 4. The method of claim 1 wherein the group of positions are identified without non-
- 2 loop related conditional branches.
- 1 5. The method of claim 4 wherein identifying the group of positions without non-
- 2 loop related conditional branches comprises:
- performing a logic operation of each value in the group of data; and
- 4 tracking the group of positions with a result of the logic operation.
  - 6. The method of claim 4 wherein the identifying the group of positions without non-
- 2 loop related conditional branches comprises:

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3		performing a logic operation of each value in the group of data;	
4		setting a flag to a result of the logic operation; and	
5		tracking the group of positions using a conditional instruction with the flag.	
1	7.	A method comprising:	
2		loading a group of data into a buffer, the group of data having a group of one or	
3	-	more set bits;	
4		identifying a position of a first set bit in the buffer without non-loop related	
5		conditional branching;	
6		encoding a run of non-set bits preceding the position; and	
7		shifting the run of non-set bits and the first set bit out of the buffer.	
1	8.	The method of claim 7 further comprising encoding a second run of set values	
2	with an ending symbol.		
1	9.	The method of claim 7 further comprising encoding a sign bit corresponding to	
2	the first set bit at the position in a second buffer.		
1	10.	The method of claim 7 wherein loading a group of data into the buffer comprises:	
2 _		loading a group of source data into a first buffer, the group of source data	

The method of claim 7 wherein identifying the first set bit comprises:

including the group of data;

extracting the group of data into the buffer.

loading a mask for a bit-plane into a second buffer;

selecting the group of data from the group of source data with the mask; and

2		shifting each bit of the group of data out of the buffer;
3		comparing each shifted bit with a compare bit to determine if each bit is one of the
4		group of set bits;
5		tracking each of the group of set bits when detected with the comparing; and
6		incrementing a counter for each shifted bit.
1	12.	The method of claim 7 wherein the first set bit is identified with one or more look-
2	up tab	oles.
1	13.	The method of claim 7 further comprising
2	٠	identifying multiple positions of first-set bits in the buffer without non-loop
3		related conditional branching; and
4		simultaneously encoding runs of non-set bits preceding the positions.
1	14.	An apparatus comprising:
2		a buffer to host a group of data having a group of one or more set bits; and
3		a variable length coding (VLC) module coupled with the memory, the VLC
4		module to identify the group of set bits' positions and to encode each run
5		of non-set bits with respect to the group of set bits' positions.

- 1 15. The apparatus of claim 14 further comprising the VLC module to encode a second
- 2 run of non-set bits with an ending symbol.
- 1 16. The apparatus of claim 14 further comprising the VLC module to encode a group
- of sign bits corresponding to the group of set bits.

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17. The apparatus of claim 14 further comprising a group of one or more look-up 1 tables for the VLC module to identify the group of set bits' positions. 2 The apparatus of claim 14 wherein the VLC module to identify each of the group 18. 1 of set bits' positions comprises 2 for each of the group of set bits, 3 to load the group of data into a memory, 4 to flip all bits of the group of data, 5 to set all bits in positions after one of the group of set bits position to nonset bits, and 7 to add the set bits in the memory in an adder tree. 8 19. A machine-readable medium that provides instructions, which when executed by a 1 group of processors of one or more processors, cause said group of processors to perform 2 operations comprising: 3 receiving a group of data having a group of set values; 4 identifying a group of positions of the group of set values within the group of 5 data; 6

1 20. The machine-readable medium of claim 19 further comprising encoding a second

for each of the group of positions, encoding a run of non-set values preceding

2 run of non-set values with an ending symbol.

each of the group of positions.

- 1 21. The machine-readable medium of claim 19 further comprising encoding a group
- 2 of signs corresponding to the group of set values.
- 1 22. The machine-readable medium of claim 19 wherein the group of positions are
- 2 identified without non-loop related conditional branches.
- 1 23. The machine-readable medium of claim 22 wherein identifying the group of
- 2 positions without non-loop related conditional branches comprises:
- performing a logic operation of each value in the group of data; and
- 4 tracking the group of positions with a result of the logic operation.
- 1 24. The machine-readable medium of claim 22 wherein the identifying the group of
- 2 positions without non-loop related conditional branches comprises:
- performing a logic operation of each value in the group of data;
- 4 setting a flag to a result of the logic operation; and
- 5 tracking the group of positions using a conditional instruction with the flag.
- 1 25. A machine-readable medium that provides instructions, which when executed by a
- 2 group of processors of one or more processors, cause said group of processors to perform
- 3 operations comprising:
- 4 loading a group of data into a buffer, the group of data having a group of one or
- 5 more set bits;
- 6 identifying a position of a first set bit in the buffer without non-loop related
- 7 conditional branching;
- 8 encoding a run of non-set bits preceding the position; and

- shifting the run of non-set bits and the first set bit out of the buffer.
- 1 26. The machine-readable medium of claim 25 further comprising encoding a second
- 2 run of set values with an ending symbol.
- 1 27. The machine-readable medium of claim 25 further comprising encoding a sign bit
- 2 corresponding to the first set bit at the position in a second buffer.
- 1 28. The machine readable medium of claim 25 wherein loading a group of data into
- the buffer comprises:
- loading a group of source data into a first buffer, the group of source data
- 4 including the group of data;
- 5 loading a mask for a bit-plane into a second buffer;
- selecting the group of data from the group of source data with the mask; and
- 7 extracting the group of data into the buffer.
- 1 29. The machine-readable medium of claim 25 wherein identifying the first set bit
- 2 comprises:
- loading the group of data into a memory;
- 4 flipping all bits of the group of data;
- setting all bits after the first zero bit to zero; and
- adding the set bits in the second memory in an adder tree, the set bits being one
- 7 bits.
- 1 30. The machine-readable medium of claim 25 wherein the first set bit is identified
- with one or more look-up tables.